

## WHAT IS CLAIMED IS:

- 1           1.     A concrete mixing truck for transporting concrete from one  
2     location to another comprising:  
3                 a chassis including: a frame; wheels coupled to the frame, a  
4     first power source coupled to the frame, and a first drivetrain coupling the  
5     first power source and the wheels;  
6                 a second drivetrain coupled to a second power source; and  
7                 a mixing drum coupled to the frame and to the second  
8     drivetrain, the drum comprising:  
9                 a wall including a first section and a second section,  
10                each of the first section and the second section having an inner  
11                surface and an outer surface;  
12                a first formation coupled to the first section and  
13                extending from the inner surface of the first section proximate a  
14                first side of the seam.
- 1           2.     The concrete mixing truck of claim 1, wherein the first  
2     formation and the first section are integrally-formed as part of a single  
3     unitary body.
- 1           3.     The concrete mixing truck of claim 1, wherein the first  
2     formation includes a first surface and a second surface.
- 1           4.     The concrete mixing truck of claim 3, wherein the first  
2     surface of the first formation angles away from the inner surface of the  
3     first section as it extends toward the seam.
- 1           5.     The concrete mixing truck of claim 4, wherein the second  
2     surface of the first formation extends from the inner surface of the first  
3     section and intersects the first surface.

1           6.     The concrete mixing truck of claim 5, wherein the second  
2 surface of the first formation angles away from the inner surface of the  
3 first section as it extends away from the seam.

1           7.     The concrete mixing truck of claim 6, wherein the second  
2 section includes a second formation extending from the inner surface of  
3 the second section proximate a second side of the seam.

1           8.     The concrete mixing truck of claim 7, wherein the second  
2 formation includes a first surface and a second surface.

1           9.     The concrete mixing truck of claim 8, wherein the first  
2 surface of the second formation angles away from the inner surface of  
3 the second section as it extends toward the seam.

1           10.    The concrete mixing truck of claim 9, wherein the second  
2 surface of the second formation extends from the inner surface of the  
3 second section and intersects the first surface of the second formation.

1           11.    The concrete mixing truck of claim 10, wherein the second  
2 surface of the second formation angles away from the inner surface of  
3 the second section as it extends away from the seam.

4           12.    The concrete mixing truck of claim 11, wherein a channel is  
5 formed between the second surface of the first formation and the second  
6 surface of the second formation.

1           13.    The concrete mixing truck of claim 12, wherein the second  
2 surface of the first formation intersects the first side of the seam.

1           14.    The concrete mixing truck of claim 13, wherein the second  
2 surface of the second formation intersects the second side of the seam.

1           15.    The concrete mixing truck of claim 12, wherein the channel  
2    is filled with a filler material.

1           16.    The concrete mixing truck of claim 15, wherein the filler  
2    material is a polyurethane compound.

1           17.    The concrete mixing truck of claim 1, wherein the first  
2    formation is configured to direct concrete within the drum away from the  
3    seam.

1           18.    The concrete mixing truck of claim 1, wherein the first  
2    section is an elastomeric material.

1           19.    The concrete mixing truck of claim 18, wherein the wall  
2    further comprises an outer layer spanning the seam between the first  
3    section and the second section.

1           20.    The concrete mixing truck of claim 19, wherein the outer  
2    layer is a fiber reinforced composite material.

1           21.    The concrete mixing truck of claim 1, wherein the first  
2    formation extends from the inner surface of the first section by  
3    approximately 6 mm.

4           22.    The concrete mixing truck of claim 1, including a wheel end  
5    reduction unit within at least one of the wheels and coupled to the first  
6    drive train.

7           23.    The concrete mixing truck of claim 1, including a first  
8    projection extending from the inner surface of the first section and  
9    configured to move concrete within the drum upon rotation of the drum.

10           24.    The concrete mixing drum of claim 23 including a second  
11   projection extending from the inner surface of the second section and  
12   configured to move concrete within the drum upon rotation of the drum.

1           25.    A heavy duty rotary concrete mixing drum for coupling to a  
2   vehicle having a drivetrain for rotating the drum, the drum comprising:  
3                a wall including a first section and a second section  
4   separated from the first section by a seam, each of the first section and  
5   the second section having an inner surface and an outer surface; and  
6                a first formation coupled to the first section and extending  
7   from the inner surface of the first section proximate a first side of the  
8   seam.

1           26.    The mixing drum of claim 25, wherein the first formation and  
2   the first section are integrally-formed as part of a single unitary body.

1           27.    The mixing drum of claim 25, wherein the first formation  
2   includes a first surface and a second surface.

1           28.    The mixing drum truck of claim 27, wherein the first surface  
2   of the first formation angles away from the inner surface of the first  
3   section as it extends toward the seam.

1           29.    The mixing drum truck of claim 28, wherein the second  
2   surface of the first formation extends from the inner surface of the first  
3   section and intersects the first surface.

1           30.    The mixing drum of claim 29, wherein the second surface of  
2   the first formation angles away from the inner surface of the first section  
3   as it extends away from the seam.

1           31. The mixing drum of claim 30, wherein the second section  
2 includes a second formation extending from the inner surface of the  
3 second section proximate a second side of the seam.

1           32. The mixing drum of claim 31, wherein the second formation  
2 includes a first surface and a second surface.

1           33. The mixing drum of claim 32, wherein the first surface of the  
2 second formation angles away from the inner surface of the second  
3 section as it extends toward the seam.

1           34. The mixing drum of claim 33, wherein the second surface of  
2 the second formation extends from the inner surface of the second  
3 section and intersects the first surface of the second formation.

1           35. The mixing drum of claim 34, wherein the second surface of  
2 the second formation angles away from the inner surface of the second  
3 section as it extends away from the seam.

4           36. The mixing drum of claim 35, wherein a channel is formed  
5 between the second surface of the first formation and the second surface  
6 of the second formation.

1           37. The mixing drum of claim 36, wherein the second surface of  
2 the first formation intersects the first side of the seam.

1           38. The mixing drum of claim 37, wherein the second surface of  
2 the second formation intersects the second side of the seam.

1           39. The mixing drum of claim 36, wherein the channel is filled  
2 with a filler material.

1           40.    The mixing drum of claim 39, wherein the filler material is a  
2 polyurethane compound.

1           41.    The mixing drum of claim 25, wherein the first formation is  
2 configured to direct concrete within the drum away from the seam.

1           42.    The mixing drum of claim 25, wherein the first section is an  
2 elastomeric material.

1           43.    The mixing drum of claim 42, wherein the wall further  
2 comprises an outer layer around the first section and the second section.

1           44.    The mixing drum of claim 43, wherein the outer layer is a  
2 fiber reinforced composite material.

1           45.    The mixing drum of claim 25, wherein the first formation  
2 extends from the inner surface of the first section approximately 6 mm.

1           46.    The mixing drum of claim 25, including a first projection  
2 extending from the inner surface of the first section and configured to  
3 move concrete within the drum upon rotation of the drum.

4           47.    The mixing drum of claim 46 including a second projection  
5 extending from the inner surface of the second section and configured to  
6 move concrete within the drum upon rotation of the drum.

1           48.    A heavy duty rotary concrete mixing drum for coupling to a  
2 vehicle having a powered drivetrain for rotating the drum, the drum  
3 comprising:  
4                   a wall including a first section and a second section, each of  
5 the first section and the second section having an inner surface and an  
6 outer surface;

7                   a seam between the first section and the second section;  
8    and  
9                   a first means for directing concrete within the drum away  
10   from the seam.

1           49.   The mixing drum of claim 48, wherein the first directing  
2   means is coupled to the first section of the wall.

1           50.   The mixing drum of claim 49, including a second means for  
2   directing concrete within the drum away from the seam, the second  
3   directing means being coupled to the second section of the wall.

1           51.   The mixing drum of claim 50, further comprising a means for  
2   coupling the first directing means to the second directing means.

1           52.   A mixing drum comprising:  
2                   a first section extending in an archimedial spiral along an  
3   axial centerline of the drum; and  
4                   a second section extending in an archimedial spiral along the  
5   axial centerline of the drum, wherein the first section and the second  
6   section extend adjacent to one another.

1           53.   The drum of claim 52, wherein the first section includes at  
2   least one projection configured to move concrete upon rotation of the  
3   drum.

1           54.   A mixing drum having a central axis and a major diameter,  
2   the drum comprising a wall having a first layer and a second layer, the  
3   second layer including a plurality of elongated fibers oriented at 10.5  
4   degrees with respect to the longitudinal axis at the major diameter.

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